

IN THE CLAIMS:

The following is a complete listing of the claims, reflects all changes currently being made thereto, and replaces all prior versions and listings:

Claims 1 - 31. (canceled).

32. (new): A photoelectric converting apparatus comprising:

an insulating supporting substrate that comprises

a pixel including a photoelectric converting element, a resetting transistor having a source and a drain, wherein one of the source and the drain is connected to said photoelectric converting element and the other of the source and the drain is connected to a resetting power source, a readout transistor having a source, a drain and a gate, wherein the gate is connected to said photoelectric converting element and one of the source and the drain of said readout transistor is electrically connected to a readout power source,

a signal line connected electrically to the other of the source and the drain of said readout transistor, and

a constant current source connected to said signal line; and

a readout unit connected to said signal line,

wherein said constant current source is formed, together with at least one of said photoelectric converting element, said resetting transistor and said readout transistor, on said signal line at a position on said insulating supporting substrate, spaced from said readout unit rather than said pixel.

33. (new): A photoelectric converting apparatus according to claim 32, wherein said readout unit is formed from crystalline silicon, and has an amplifier connected to said signal line and an analog multiplexer connected to said amplifier.

34. (new): A photoelectric converting apparatus according to claim 32, wherein said pixel comprises further a selecting transistor connected between the one of the source and the drain of said readout transistor and said readout power source, or between the one of the source and the drain of said readout transistor and said signal line, and said constant current source is formed from amorphous silicon or polysilicon on the same insulating substrate as that for said readout transistor.

35. (new): A photoelectric converting apparatus according to claim 34, wherein said constant current source includes a constant current source transistor of which a gate is connected to a power supply for the constant current source.

36. (new): A photoelectric converting apparatus according to claim 35, wherein said power supply for the constant current source provides the gate of said constant current source transistor with a voltage satisfying a relation: $V_{ds} > V_{gs} - V_{th}$, wherein V_{ds} is a drain-source voltage, V_{gs} is a gate-source voltage and V_{th} is a threshold voltage.

37. (new): A photoelectric converting apparatus according to claim 32, wherein said constant current source includes a constant current source transistor in which a gate and a source are mutually connected.

38. (new): A photoelectric converting apparatus according to claim 32, wherein said constant current source includes a constant current source transistor in which a gate and a source are connected through a resistor.

39. (new): A photoelectric converting apparatus according to claim 34, wherein at least one selected from a group consisting of said resetting transistor, said readout transistor and said constant current source is formed from an amorphous silicon layer or a polysilicon layer.

40. (new): A photoelectric converting apparatus according to claim 32, further comprising a phosphor layer which absorbs a radiation and emits a light of a wavelength region detectable by said photoelectric converting element.

41. (new): A photoelectric converting apparatus according to claim 32, wherein said photoelectric converting element is constituted of a PIN photodiode or a MIS sensor.

42. (new): A photoelectric converting apparatus according to claim 32, wherein said photoelectric converting element is a direct photoelectric converting element which directly converts a radiation into a charge.

43. (new): A photoelectric converting apparatus according to claim 42, wherein said direct photoelectric converting element is constituted of a material selected from a group consisting of amorphous selenium, gallium arsenide, gallium phosphide, lead iodide, mercury iodide, CdTe and CdZnTe.

44. (new): A photoelectric converting apparatus comprising:
an insulating supporting substrate comprising
a sensor array including a plurality of pixels arranged two dimensionally, each pixel including a photoelectric converting element, a resetting transistor having a source and a drain, wherein one of the source and the drain is connected to said photoelectric converting element and the other of the source and the drain is connected to a resetting power source, a readout transistor having a source, a drain and a gate, wherein the gate is connected to said photoelectric converting element and one of the source of said readout transistor and the drain of said readout transistor is electrically connected to a readout power source,
a plurality of signal lines connected electrically and commonly to the others of the sources and the drains of said readout transistors, and
a constant current source connected to said signal lines; and
a readout unit connected to said signal lines,

wherein said constant current source is formed, together with said photoelectric converting elements and/or said resetting transistors and/or said readout transistors, on said signal lines at a position on said insulating supporting substrate, spaced from said readout unit rather than said pixels.

45. (new): A photoelectric converting apparatus according to claim 44, wherein said readout unit is formed from crystalline silicon, and has an amplifier connected to said signal lines and an analog multiplexer connected to said amplifier.

46. (new): An X-ray image pickup system for reading an image of X-rays transmitted through an object comprising:

- a photoelectric converting apparatus according to claim 32 or 35;
- an X-ray generating apparatus; and
- a control unit,

wherein said control unit controls operations of the X-ray generating apparatus and the photoelectric converting apparatus.